Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. An active-matrix organic electroluminescent (OEL) display panel, comprising:
a substrate;
a transparent conductive layer on the substrate;
a first passivation layer on the transparent conductive layer, having a plurality of openings therein exposing portions of the transparent conductive layer, wherein each opening defines a pixel region;
a plurality of thin film transistors arranged as a matrix, each comprising a gate electrode, a source and a drain disposed on the first passivation layer corresponding to an opening;
a plurality of organic function layers disposed on the transparent conductive layer in the openings; and
a plurality of metal electrode layers disposed on the organic function layers and electrically connected to the corresponding drains.

[c2] 2. The active-matrix OEL display panel of claim 1, wherein each organic function layer comprises a hole injection layer, a hole transporting layer, an emitting layer and an electron transporting layer that are stacked se-

quentially.

[c3] 3. The active-matrix OEL display panel of claim 1, further comprising a second passivation layer disposed on each thin film transistor.

[c4] 4. The active-matrix OEL display panel of claim 1, wherein the transparent conductive layer includes indium tin oxide (ITO) or indium zinc oxide (IZO).

[c5] 5. The active-matrix OEL display panel of claim 1, wherein each metal electrode layer includes a LiF/Al composite layer.

[c6] 6. An active-matrix organic electroluminescent (OEL) display panel, comprising:
a substrate;
a metal layer on the substrate, having a plurality of opening therein exposing portions of the substrate;
a first passivation layer on the metal layer, having a plurality of openings therein aligned with the openings in the metal layer;
a plurality of thin film transistors arranged as a matrix, each comprising a gate electrode, a source and a drain and disposed on the first passivation layer corresponding to an opening;
a plurality of transparent conductive layers disposed on

the substrate in the openings;
a plurality of organic function layers disposed on the transparent conductive layers in the openings; and
a plurality of metal electrode layers disposed on the organic function layers and electrically connected to the corresponding drains.

[c7] 7. The active-matrix OEL display panel of claim 6, wherein each organic function layer comprises a hole injection layer, a hole transporting layer, an emitting layer and an electron transporting layer.

[c8] 8. The active-matrix OEL display panel of claim 6, further comprising a second passivation layer on the thin film transistors.

[c9] 9. The active-matrix OEL display panel of claim 6, wherein the transparent conductive layer contains indium tin oxide (ITO) or indium zinc oxide (IZO).

[c10] 10. The active-matrix OEL display panel of claim 6, wherein the metal electrode layer includes a LiF/Al composite layer.

[c11] 11. A method for fabricating an active-matrix organic electroluminescent (OEL) display panel, comprising:
forming a transparent conductive layer on a substrate;
forming a first passivation layer on the transparent con-

ductive layer;

forming a plurality of gate electrodes on the first passivation layer;

forming a gate insulator covering the gate electrodes;

forming a plurality of openings in the gate insulator and the first passivation layer to expose portions of the transparent conductive layer;

forming a channel layer on the gate insulator over the gate electrode;

forming a source and a drain on the channel layer;

forming an organic function layer in the opening; and

forming a metal electrode layer on the organic function layer, the metal electrode layer being electrically connected to a corresponding drain.

[c12] 12. The method of claim 11, wherein each organic function layer is formed by sequentially stacking a hole injection layer, a hole transporting layer, an emitting layer and an electron transporting layer.

[c13] 13. The method of claim 11, further comprising forming a second passivation layer on each thin film transistor after the thin film transistors are formed and before the metal electrode layer is formed, the second passivation layer exposing at least a portion of the drain of the corresponding thin film transistor.

[c14] 14. The method of claim 11, wherein the transparent conductive layer includes indium tin oxide (ITO) or indium zinc oxide (IZO).

[c15] 15. The method of claim 11, wherein each metal electrode layer includes a LiF/Al composite layer.

[c16] 16. The method of claim 15, wherein the aluminum layer is formed with a sputtering process.

[c17] 17. A method for fabricating an active-matrix organic electroluminescent (OEL) display panel, comprising:
forming a transparent conductive layer on a substrate;
forming a passivation layer on the transparent conductive layer;
forming a plurality of thin film transistors on the passivation layer;
forming a plurality of openings in the passivation layer to expose portions of the transparent conductive layer;
forming an organic function layer in the opening; and
forming a metal electrode layer on the organic function layer, the metal electrode layer being electrically connected to a drain of a corresponding thin film transistor.

[c18] 18. The method of claim 17, wherein forming the thin film transistors on the passivation layer comprises:
forming a plurality of gate electrodes on the passivation

layer;

forming a gate insulator covering the gate electrodes;

forming a channel layer on the gate insulator of each gate electrode; and

forming a source and a drain on each channel layer.

[c19] 19. The method of claim 18, wherein the openings are formed in the gate insulator and the passivation layer to expose portions of the transparent conductive layer.